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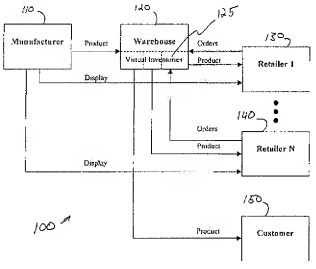
(54) Title: VIRTUAL INVENTORY SYSTEM



(57) Abrégé/Abstract:
A distribution system including a virtual inventory system for supplying multiple products to multiple retailers is provided. The distribution system includes an inventory storage area subdivided into multiple dedicated retailer areas called virtual inventories which store a particular retailer's inventory. An order fulfillment system receives orders form a particular retailer and ships products from the retailer's virtual inventory to the destination directed by the retailer such as to the retailer or to a customer. An inventory maintenance system maintains product levels within the virtual inventories as required by the needs of the retailer. Retailer needs are determined by at least one of past sales history, gut size sales, and test sales results. The inventory maintenance system re-orders inventory from a supplier or manufacturer when needed. Another aspect of the present invention is a virtual inventory apparatus for managing inventory including a product source providing products to a warehouse in response to inventory orders from the warehouse. The apparatus also includes at least two retail sites for transmitting customer-based orders to the warehouse. The warehouse also includes at least two virtual inventory storage locations, each designated for a specific retail site. Another aspect of the present invention is a method for managing inventory among a product source, a warehouse, and at least one retailer including procuring a product from a product source in response to an inventory order from a warehouse, moving the product to the warehouse and then segmenting the product into at least two virtual inventories, each specifically designated for a retailer. Customer based orders are transmitted from the retailer to the warehouse where the orders are fulfilled from the virtual inventory for that retailer.

TITLE OF THE INVENTION

Virtual Inventory System

CROSS-REFERENCE TO RELATED APPLICATIONS

Not applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

Not applicable.

BACKGROUND OF THE INVENTION

The present invention generally relates to a virtual inventory system. More particularly, the present invention relates to a virtual inventory system which maintains a virtual inventory for each of a number of retailers at a centralized warehouse location.

Supplier managed inventory systems are becoming more accepted and desirable to retailers. Retailers often prefer not to deal with the expense and complexity of managing their inventory individually. Suppliers are often able

to assist retailers in managing their inventory through inventory tracking, monitoring and forecasting. Frequently, suppliers ship retailers an inventory, keep records of the inventory shipped, and at intervals compare the shipped inventory with the retailer's sales records. The supplier may then suggest an adjusted inventory level to the retailer in light of the retailer's sales records.

Inventory control and monitoring assists in cost effective inventory management. Through inventory control, retailer storage costs may be lowered and product supply decisions can be made more quickly in order to better serve customer demand. Also, inventory control may help quality control and increase consumer satisfaction. Inventory control has been continuously developed as long as inventories have been around. Recently, several patents teaching new systems on inventory control have issued, including the following.

U. S. Patent No. 5,884,300 to Brockman discloses an inventory pipeline management system including an inventory model and supporting process providing a full stream inventory management solution for the inventory that is normally present between the manufacturing and field consumption points. The model extends just-in-time principles to support a desired production level and minimizes inventory impacts related to consumption fluctuations by attempting to maintain a constant "days on hand" inventory. The process of the Brockman patent may model multiple

field consumption points. However, under the model of the Brockman patent inventories are maintained at each field consumption point. The model merely compares the actual inventory to a desired inventory level equating to a number of "days on hand" of inventory and determines if a re-order is necessary. The model of the Brockman patent relies on frequent accurate inventories at a multitude of remote locations.

Similar to the Brockman patent, U. S. Patent No. 5,893,076 to Hafner et al. discloses a supplier driven commerce transaction processing system and methodology. The system of the Hafner patent includes a replenishment system receiving inventory information from a retailer host. The replenishment system may also receive information from an inventory catalog or a supplier server. The replenishment system includes a supplier access transaction processing application to approve or modify suggested business transactions such as re-ordering inventory for a specific retailer in response to a low level of inventory at the retailer. As with the model of the Brockman patent, the system of the Hafner patent at heart compares actual inventory with desired inventory at retailer locations and determines the amount of inventory needed.

U. S. Patent No. 5,664,111 to Nahan et al. discloses a computerized, multimedia, network, real time, interactive marketing and transactional system. The system of the Nahan patent is designed to provide art dealers

with access to an extensive collection of artwork from the inventories of all member dealers worldwide. The system thus allows each dealer to offer potential clients a much wider array of works while increasing the exposure of each dealer by increasing the number of potential clients that may view their wares. However, because fine art is not a manufactured product, the system of the Nahan patent is not linked to a manufacturer and does not provide for inventory management.

Thus, a need has long existed for an inventory system providing cost effective inventory management and monitoring. Additionally, a need has long existed for an inventory system to decrease the costs of inventory storage at retailers. Additionally, a need has long existed for an inventory system providing decreased time between retailer need for a product and that product's manufacture and supply to a customer. Finally, a need has long existed for an inventory system providing increased cost effectiveness of product distribution, increased customer satisfaction, and increased quality control.

SUMMARY OF THE INVENTION

The present invention provides a distribution system including a virtual inventory system for supplying multiple products to multiple retailers. An inventory storage area is subdivided into multiple dedicated retailer areas called virtual inventories which store a particular retailer's inventory. An order fulfillment system receives orders form a particular retailer and ships products from the retailer's virtual inventory to the destination directed by the retailer. An inventory maintenance system maintains product levels within the virtual inventories as required by the needs of the retailer. These and other features of the present invention are discussed or apparent in the following detailed description of the preferred embodiments of the invention.

Another aspect of the present invention is a virtual inventory apparatus for managing inventory. The apparatus includes a product source providing products to a warehouse in response to inventory orders from the warehouse. The apparatus also includes at least two retail sites for transmitting customer-based orders to the warehouse. The warehouse also includes at least two virtual inventory storage locations, each designated for a specific retail site.

Another aspect of the present invention is a method for managing inventory among a product source, a warehouse, and at least one retailer. The method includes procuring a product from a product source in response

to an inventory order from a warehouse, moving the product to the warehouse and then segmenting the product into at least two virtual inventories, each specifically designated for a retailer. Customer based orders are transmitted from the retailer to the warehouse where the orders are fulfilled from the virtual inventory for that retailer.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a virtual inventory system 100 according to one embodiment of the present invention.

Figure 2 is a flowchart 200 of one embodiment of the virtual inventory system of the present invention.

Figure 3 illustrates a retailer display according to a first embodiment of the present invention.

Figure 4 illustrates a retailed display according to a second embodiment of the present invention.

Figure 5 illustrates exemplary test market data for determining the sizes and styles to be included in a retailer display at an exemplary retailer.

Figure 6a-c illustrates exemplary assortment allocation tables according to the present invention.

Figure 7a-b illustrates an exemplary inventory management tables of the present invention.

Figure 8 illustrates an exemplary size chart for an exemplary retailer display.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure 1 provides an overview of one embodiment of a virtual inventory system 100 according to the present invention. The system 100 causes products to be conveyed from a manufacturer (or importer or other supplier) 110 to a warehouse 120 having multiple virtual inventories 125, and from there to a group of retailers such as a first retailer 130 and an nth retailer 140, and ultimately to a customer 150. In operation, the manufacturer 110 provides a multiple products and a display. The product is then shipped to the warehouse 120 where the product is segmented into a virtual inventory 125 for each retailer 130-140 as described below. A display is sent to each retailer including the first retailer 130 and the nth retailer 140. Each retailer 130-140 sends orders for a product to the warehouse 120. Product orders are filled from the virtual inventory 125 for a specific retailer 130-140 as further described below. Additionally, product may be shipped directly to the customer 150 from to the warehouse 120.

It will be understood that the inventory system 100 can be implemented in various ways within the scope of the invention. For example, the product supply role of the manufacturer 110 can also be carried out by an importer, a distributor, a broker who secures products from third parties, etc. Additionally, the product storage role of the warehouse 120 may be assumed by multiple warehouses or warehouse space at the site of the manufacturer 110.

At the warehouse 120, each retailer 130-140 is associated with a single, predetermined virtual inventory 125. The virtual inventory 125 for each retailer 130-140 may be determined from such factors as past sales history, gut size sales, variation in re-order quantities, and test sales results. The virtual inventory 125 for each retailer 130-140 is not ordinarily re-allocated between retailers 130-140 at the warehouse 120. However, reallocation may be appropriate in some circumstances. The virtual inventory 125 for each retailer 130-140 is monitored at the warehouse 120. Once a specific retailer's virtual inventory falls below a predetermined level, the product is re-ordered from the manufacturer 110. Products may be reordered from the manufacturer 110 in accordance with the known Min-Max inventory size system. The virtual inventories of each retailer 130-140 are managed at the warehouse 110 level using appropriate lead time to order from the manufacturer 110 and maintain desired inventory levels. Control of

virtual inventory 125 at the warehouse 120 may provide better quality control and the ability to immediately access all inventory in a region, such as the continental United States. Order fulfillment and shipping at the warehouse may be accomplished by a commercially available Pick-And-Pack system. Before sufficient sales data is available for a specific retailer to project demand or establish customer patterns, the retailer may be served from a general inventory pool dedicated to such retailers.

Once the warehouse 120 receives an order from a retailer 130-140 and the ordered product is taken from the virtual inventory 125 for that retailer, the ordered product is packaged and shipped to either the retailer 130-140 or the customer 150. The product may then be shipped as soon as overnight via commercially available shipping services from the warehouse 120 to the retailer 130-140 or the customer 150. At peak season times, products may be shipped from the warehouse 120 to the retailers 130-140 daily.

At the retailer, inventory may be displayed at a customer-accessible location in a retailer display such as the retailer displays of Figure3 and Figure 4. Customers may try on shoes, make their selection, and then record their selection in the order pad for ordering. Alternatively, the customer may be assisted by a salesperson. Orders may be placed by either the retailer or the customer.

Figure 2 is a flowchart 200 of one embodiment of the virtual inventory merchandiser and system of the present invention. First, at step 210, the display and the product are manufactured by a manufacturer. Next, at step 220, the display is shipped from the manufacturer to the retailer. Then, at step 225, the virtual inventory needed for all retailers is determined. As described above, the virtual inventory may be determined from such factors as past sales history, gut size sales, and test sales results. Gut size sales are the sales patterns during heavily sold times, such as at the beginning of a season for seasonal products. Then, at step 230, the product is shipped from the manufacturer to the warehouse. Sufficient quantities of product are shipped to fulfill a predetermined virtual inventory for each store. Next, at step 240, the product received by the warehouse is segmented into virtual inventories for each store. The process then shifts from manufacturer-driven to customer-driven at step 250, where a customer makes a selection at a retailer. Then, at step 260, the customer's selection is transmitted to the warehouse. At the warehouse, the customer's selection is retrieved from the virtual inventory for the retailer at step 270. The customer's selection is then packaged and shipped to either the customer or the retailer at step 280. Finally, at step 290, the remaining virtual inventory for the retailer is analyzed at the warehouse to determine whether the virtual inventory remains at acceptable levels after the customer's selection is fulfilled. If the

virtual inventory is not at acceptable levels, the needed product is re-ordered from the manufacturer.

Another embodiment of the present invention is to implement virtual inventories for each retailer while simultaneously maintaining a general inventory pool. This approach may allow the flexibility of retailer virtual inventories while providing a reserve for immediate need. Additionally, this system may allow production to be scheduled only when a large number of units are needed, thus saving production and shipping costs.

A preferred embodiment of the virtual inventory system 100 may be implemented with golf shoes of various sizes and styles as the products and pro shops or other golf supply stored as the retailers 130-140. The display may be a compact display including each style and size of golf shoe available for customer sizing.

Figure 3 illustrates a retailer display 300 according to a first embodiment of the present invention. The display 300 includes a base 310, six injection-molded shelves 321-326, each shelf having six shoe positions 327, six side panels 330, and a header 340. Three of the side panels 330 include a order pad 350. The header 340 includes six slots 360 for replaceable sign cards. The side panels 330 attach between the base 310 and the header 340 and provide support for the shelves 321-326. The base

310, shelves, 321-326, side panels 330, and header 340 are preferably comprised of plastic.

In operation, golf shoes of a range of sizes and styles are placed at multiple shoe positions 327 in the retailer display 300. The retailer display 300 is positioned on-site to allow customer access and interaction. Customers may try on shoes, make their selection, and then record their selection in the order pad 350 for ordering. Alternatively, the retailer display 300 may be used by the customer with the assistance of a salesperson. The six slots 360 may include replaceable sign cards illustrating many types of information including ordering instructions, size charts, advertising for other products, and so forth.

Figure 4 illustrates a retailer display 400 according to a second embodiment of the present invention. The retailer display 400 of Figure 4 includes a base 410, six shelves 421-426 each having six shoe positions 447, six side panels 430 of which three have an order pad 450, and a header 460 generally similar to those the retailer display 300 of Figure 3. In addition, each shoe position 447 in the retailer display 400 includes a shoe sensor 460 and an indicator light 470 connected to a timer (not shown).

In operation, the indicator light blinks if a pair of shoes is removed from the shoe location 327 for longer than a certain time, preferably 20 minutes. That is, the shoe sensor 460 detects when a pair of shoes is

removed from an individual shoe position 447 and activates a pre-determined timer having a time limit. The timer may be set by a manufacturer or alternatively the timer may be adjustable by the retailer. Once the time limit for the timer has been reached, the indicator light 470 begins to blink. The blinking light may serve as an indicator to the retailer to re-order shoes that have been purchased.

As shown in Figures 3 and 4 above, the retailer display may only display a subset of the available sizes and styles of golf shoes. Consequently, it may desirable to include the most popular sizes and styles on the retailer display and allow other sizes and styles to be custom-ordered. Because customer patterns may differ between retailers, different retailers may include different sizes and styles on their display.

Figure 5 illustrates exemplary test market data for determining the sizes and styles to be included in a retailer display at an exemplary retailer. Figure 5 includes a chart 500 illustrating percentage golf shoe sales for specific sizes of a single model. For example, referring to the chart 500, 7.9% of the sales of this exemplary model were size 10-medium.

Figure 8 illustrates an exemplary size chart for an exemplary retailer display. Figure 8 includes a chart 800 illustrating the golf shoe selection for inclusion on a retailer display based on the percentage golf shoe sales shown in the chart 500 of Figure 5. Golf shoe size selections that fall below a

minimum percentage threshold are not included in the retailer display. Golf shoe sizes selected above the minimum percentage threshold are included in the display. Golf shoe sizes with the greatest demand may be included in the retailer display two or more times. By including the most popular sizes in the retail display, the sizes in the retail display represent over 90% of all total sales. Thus, on the average, only 10% of customer orders may need to be specially ordered. Through the accurate inventory management and quick replacement of the present virtual inventory system, golf shoes that are sold are replaced in the retailer display within days, preferably within 3-5 days from the receipt of the order. Alternatively, the retailer display may be constructed to accommodate a greater or lesser number of pairs of golf shoes. Regardless of the size of the retailer display the golf shoe sizes included in the display may be selected based on maximizing the percentage sales represented by the included golf shoe sizes.

Figure 6a-c illustrates exemplary assortment allocation tables 600 according to the present invention. The exemplary assortment allocation tables 600 are comprised of seven rows 601-607 and four columns 610-640. Each of the first six rows 601-606 corresponds to a one of six possible assortments of golf shoes for the retailer display. The first column 610 of the first six rows 601-606 is the chart 800 of Figure 8, which corresponds to the sizes selected for inclusion in the retailer display based on

consumer demand. Each of the remaining columns 620-640 represents a breakdown by model of the shoes that are included in the retailer display for each particular assortment 601-606. That is, for each row 601-606, the second column 620 shows the number and sizes of golf shoes of a first style to be included in the retailer display, the third column 630 shows the number and sizes of golf shoes of a second style to be included in the retailer display and the fourth column 630 shows the number and sizes of golf shoes of a third style to be included in the retailer display. Each the total number of golf shoes for each roe 601-606 conforms to the numbers and sizes of the charts in the first column 610 of each row 601-606.

The type of assortments 601-606 need not be represented in equal numbers at retailers. The type of assortment sent to a retailer may be reflective of the consumption patterns of the specific retailer rather than the consumption of golf shoes on the whole. For example, retailers who previously sold a larger than average percentage of white shoes may receive an assortment with a greater number of white shoes. In the present example, the number of displays for each assortment is shown in the roof tops column 650. The final row 607 represents the total rack need, that is, the numbers and sizes of golf shoes necessary to stock the initial racks that will be sent to the retailers.

Figure 7a-b illustrates exemplary inventory management tables 700 of the present invention. The inventory management tables 700 include four rows 701-704 and three columns 710-730. Each column 710-730 represents inventory information directed to one of three exemplary models. The first row 701 represents the total rack need for each of the three models as shown in the seventh row 607 of Figure 6. The third row 703 represents the total expected sales for each model. The total expected sales for each model may be based on the previous sales data as shown in Figure 7. Additionally, each the sales for each model may be multiplied by a increased sales factor 750 representing the expected increase in sales for that model for the present year. The sales factor 750 need not be the same for each model and may be greater for models having sales increasing at a greater rate then other models. The second row 702 is an exemplary inventory replenishment forecast. The second row 702 may be determined by subtracting the first row 701 from the third row 703. That is, the replenishment forecast of he second row 702 represents the total forecast of the third row 703 minus the inventory on the retailer displays of the first row 701. Also, for each size and style, if the inventory of the retailer displays of the first row 701 exceeds the total forecast of the third row 703, then a zero is placed in the replenishment forecast of the second row 702 rather than a negative number because the inventory demand of the total forecast

has already been satisfied. The fourth row 704 represents an exemplary total number of golf shoes to buy in each style and size. The total buy of the fourth row 704 may be determined by adding the replenishment forecast of the second row 702 to the total rack need of the first row 701. Thus, the total buy of the fourth row 704 does not correspond exactly to the total forecast of the third row 703 because it is anticipated that not all golf shoes in the retailer displays will be sold. Additionally, golf shoes are not generally re-distributable between retailer displays at different retailers.

Preferably, before a peak selling season begins, the pro shop contracts to carry the shoe display and to purchase the display shoes at a discount at the end of the season. A total production including a virtual inventory is then determined for the pro shop. For example, the pro shop may require 36 pairs of shoes to stock the display as well as 132 additional pairs to be held at the warehouse as a virtual inventory.

The total production for all pro shops and golf stores is combined and sent to a manufacturer or another source of shoes. The manufacturer produces the ordered shoes and optionally provides the display. The manufacturer ships the display and display shoes to the pro shop and ships the other shoes to the warehouse. The warehouse segments the shoes into virtual inventories as described above. The pro shop sets up the display and allows customers to try on shoes. Customers select the shoe style and size

they desire and inform the pro shop. The pro shop then communicates the customer's selection to the warehouse. The warehouse keys the order and generates a pick-ticket. The warehouse then picks, packs and ships the shoes and forwards an invoice. The shoes may be shipped overnight if desired. The shoes may be shipped via a commercial carrier such as United Parcel Service. A customer may also call a dedicated representative of the warehouse to determine the status of his or her order. Shoes may be shipped either to a pro shop or a different address selected by the customer such as the customer's home or office. Re-order trigger points for the virtual inventory may be established based upon the history of a given pro shop, the lead time necessary to satisfy a particular product and test results from inventory management tests. At the end of the season, the pro shop may be billed for the shoes in the display and the display either returned to the warehouse or stored at the pro shop for use during the next season.

The virtual inventory system 100 of the present invention is extremely cost effective for many reasons. One reason is that the virtual inventory system 100 shifts inventory storage from multiple retailer locations to a single warehouse location. Inventory storage costs at a single warehouse are much less expensive than inventory storage, counting, security and maintenance at multiple retailers. Additionally, by monitoring inventory at a single, warehouse level, inventory can be more effectively monitored. Also,

because the warehouse communicates with the manufacturer directly and monitors inventory, it eliminates the middle-man of retailers having to go through the warehouse when needing to re-order from a manufacturer. This provides for better inventory awareness, tracking and forecasting as well as eliminating any lag time between retailer need and warehouse awareness. Additionally, order fulfillment is shifted from the individual retailer level to the warehouse level which improves overall cost effectiveness of product distribution through economies of scale and more effective quality control. These advances help to economically and efficiently minimize back orders and increase customer and consumer satisfaction.

Other advantages may include less "shrinkage" or employee pilfering at retailers because fewer persons have access to non-display inventory. Additionally, costs savings may be realized by the retailer because less space may be needed to store inventory and fewer employees may be necessary to service customers. Additionally, through the more effective inventory control available at the warehouse rather then the individual retailer level, the number of back orders may be reduced.

Additionally, the present virtual inventory system may be employed with other type of shoes besides and golf shoes and other types of merchandise generally.

While particular elements, embodiments and applications of the present invention have been shown and described, it is understood that the invention is not limited thereto since modifications may be made by those skilled in the art, particularly in light of the foregoing teaching. It is therefore contemplated by the appended claims to cover all modifications and incorporate all features which come within the spirit and scope of the invention.

CLAIMS:

1. A distribution system for supplying multiple products to multiple retailers, comprising:

an inventory storage area subdivided into multiple dedicated retailer areas, each such area dedicated to storing a particular retailer's inventory of said multiple products;

an order fulfillment system for receiving orders from a particular retailer and shipping the ordered products to the order of that retailer from a dedicated retailer area assigned to that retailer; and

an inventory maintenance system for maintaining the inventory of at least one product stored in said dedicated retailer areas as required for the needs of the retailer to whom the retailer area is dedicated.

2. The system of claim 1 additionally including a display for displaying multiple products at a retailer.

3. The system of claim 2 wherein said display is shipped directly to said retailer from a manufacturer.

4. The system of claim 1 wherein said ordered products are shipped directly to a customer.

5. The system of claim 1 wherein said inventory maintenance system determines the needs of the retailer from at least one of past sales history, gut size sales, and test sales results.

6. The system of claim 1 wherein said inventory maintenance system orders additional inventory when a re-order trigger point is reached.

7. The system of claim 6 wherein said re-order trigger point is determined from at least one of past sales history, gut size sales, and test sales results.

8. A virtual inventory apparatus for managing inventory for at least one retailer comprising:

a product source;

a warehouse for storing products received from said source, said source providing said products in response to an inventory order from said warehouse;

at least two retail sites for transmitting customer-based orders to said warehouse, and

at least two virtual inventory storage locations maintained in said warehouse, each specifically designated for at least one of said retail sites.

9. The system of claim 8 wherein said manufacturer additionally provides a display for displaying multiple products.

10. The system of claim 9 wherein said display is shipped directly to said at least one retailer.

11. The system of claim 8 wherein said customer order is fulfilled by shipping said customer order to a selected one of a retailer and the customer.

12. The system of claim 8 wherein the desired level of said virtual inventory level is determined from at least one of past sales history, gut size sales, and test sales results.

13. The system of claim 8 wherein said warehouse additionally monitors said virtual inventory level for said at least one retailer and sends an

inventory order to said manufacturer when a virtual inventory re-order trigger point is reached.

14. The system of claim 13 wherein said virtual inventory re-order trigger point is determined from at least one of past sales history, gut size sales, and test sales results.

15. A method for managing inventory among a product source, a warehouse, and at least one retailer comprising:

procuring a product from a product source in response to an inventory order from a warehouse;

moving said product to said warehouse;

segmenting said product at said warehouse into at least two virtual inventories, each specifically designated for at least one retailer;

transmitting customer based orders from said at least one retailer to said warehouse; and

fulfilling said customer based orders from said virtual inventory designated for said at least one retailer.

16. The method of claim 15 additionally including the step of providing a display for multiple products to at least one retailer.

17. The method of claim 16 additionally including the step of shipping said display to said at least one retailer.

18. The method of claim 15 wherein said fulfilling step additionally includes shipping said customer based order to one of said at least one retailer and a customer of said retailer.

19. The method of claim 15 wherein said segmenting step includes the step of segmenting said product into a virtual inventory with a virtual inventory level determined from at least one of past sales history, gut size sales, and test sales results.

20. The method of claim 15 further including the step of monitoring a virtual inventory level for said at least one retailer at said warehouse and sending an inventory order to said manufacturer when a virtual inventory re-order trigger point is reached.

21. The method of claim 20 wherein said virtual inventory re-order trigger point is determined from at least one of past sales history, gut size sales, and test sales results.

22. A golf shoe inventory management system including:

a remote golf shoe inventory storage area subdivided into multiple dedicated retailer areas for each retailer, each such area dedicated to storing a particular retailer's inventory of said golf shoes;

a golf shoe order fulfillment system for receiving orders from a particular retailer and shipping the ordered golf shoes from a dedicated retailer area assigned to that retailer;

a golf shoe inventory maintenance system for maintaining the inventory of golf shoes stored in said dedicated retailer areas as required for the needs of the retailer to whom the retailer area is dedicated; and

a golf shoe retailer display, located at said retailer, for displaying at least a subset of the set of available golf shoe sizes of at least one style of golf shoes.

23. The system of claim 22 wherein said golf shoes are shipped directly to a customer.

24. The system of claim 22 wherein said golf shoe inventory maintenance system orders additional inventory when a re-order trigger point is reached.

25. The system of claim 24 wherein said re-order trigger point is determined from at least one of past sales history, gut size sales, and test sales results.

26. The system of claim 24 wherein said golf shoe inventory maintenance system includes an initial inventory level based on forecasted sales and inventory need for said golf shoe retailer display.

ABSTRACT OF THE DISCLOSURE

A distribution system including a virtual inventory system for supplying multiple products to multiple retailers is provided. The distribution system includes an inventory storage area subdivided into multiple dedicated retailer areas called virtual inventories which store a particular retailer's inventory. An order fulfillment system receives orders form a particular retailer and ships products from the retailer's virtual inventory to the destination directed by the retailer such as to the retailer or to a customer. An inventory maintenance system maintains product levels within the virtual inventories as required by the needs of the retailer. Retailer needs are determined by at least one of past sales history, gut size sales, and test sales results. The inventory maintenance system re-orders inventory from a supplier or manufacturer when needed. Another aspect of the present invention is a virtual inventory apparatus for managing inventory including a product source providing products to a warehouse in response to inventory orders from the warehouse. The apparatus also includes at least two retail sites for transmitting customer-based orders to the warehouse. The warehouse also includes at least two virtual inventory storage locations, each designated for a specific retail site. Another aspect of the present invention is a method for managing inventory among a product source, a warehouse, and at least one retailer including procuring a product from a product source in response to an inventory order from a warehouse, moving the product to the warehouse and then segmenting the product into at least two virtual inventories, each specifically designated for a retailer. Customer based orders are transmitted from the retailer to the warehouse where the orders are fulfilled from the virtual inventory for that retailer.

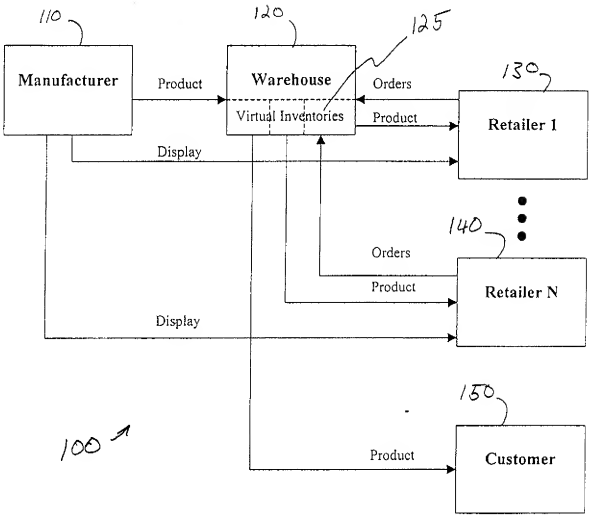

110
120
125
130
140
150
100
Manufacturer
Product
Warehouse
Virtual Inventories
Orders
Product
Retailer 1
Display
Orders
Product
Retailer N
Display
Product
Customer

Figure 1

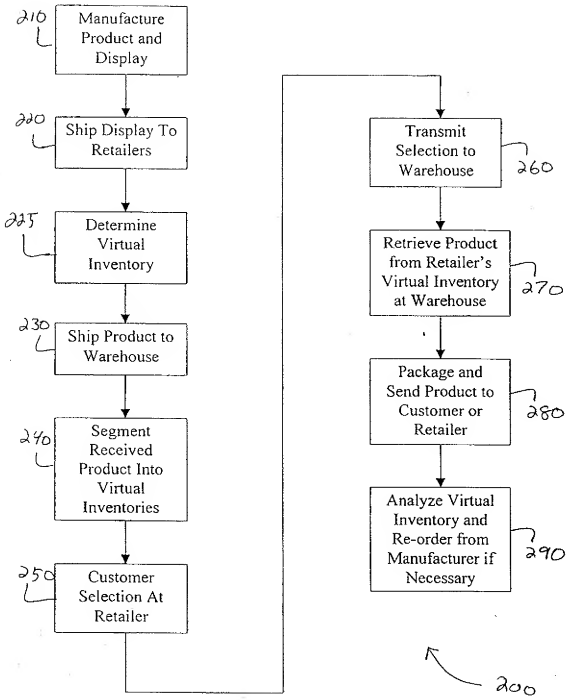

210
Manufacture Product and Display
220
Ship Display To Retailers
225
Determine Virtual Inventory
230
Ship Product to Warehouse
240
Segment Received Product Into Virtual Inventories
250
Customer Selection At Retailer
Transmit Selection to Warehouse
260
Retrieve Product from Retailer's Virtual Inventory at Warehouse
270
Package and Send Product to Customer or Retailer
280
Analyze Virtual Inventory and Re-order from Manufacturer if Necessary
290
200

Figure 2

FIG. 3

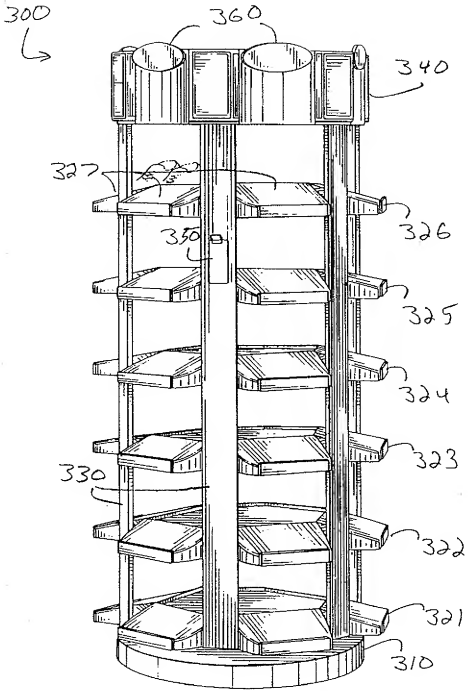
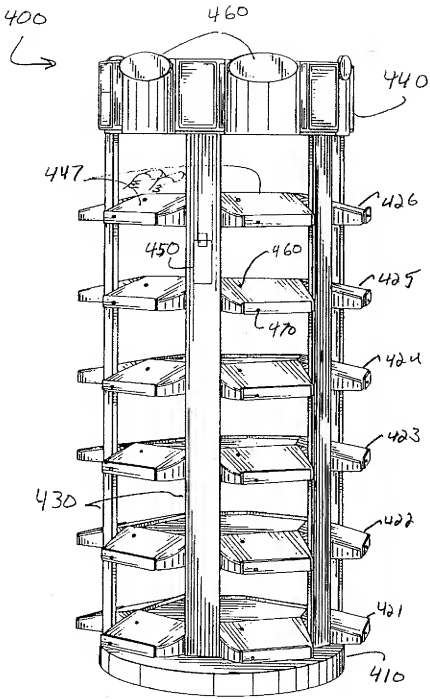


FIG. 4



500

Sales Model % Consumption.

	Narrow	Medium	Wide	X-Wide	Total
6				0.0%	0.02%
6.5				0.1%	0.07%
7		0.6%	0.2%	0.2%	1.00%
7.5		1.5%	0.6%	0.4%	2.45%
8		3.2%	1.9%	0.5%	5.56%
8.5		4.5%	2.5%	0.4%	7.45%
9	0.4%	6.6%	3.6%	0.6%	11.21%
9.5	0.5%	7.3%	4.2%	0.5%	12.47%
10	0.6%	7.9%	4.6%	0.6%	13.59%
10.5	0.6%	7.9%	4.4%	0.4%	13.33%
11	0.5%	7.1%	3.7%	0.4%	11.70%
11.5	0.4%	5.1%	1.9%	0.2%	7.61%
12	0.4%	5.1%	1.9%	0.2%	7.66%
13	0.3%	3.4%	0.6%	0.2%	4.37%
14		0.9%	0.2%		1.10%
15		0.4%			0.40%
	3.71%	61.35%	30.29%	4.65%	100%

90%	= % Sales covered by Virtual Inventory Rack
10%	= % Special Order

FIG 5

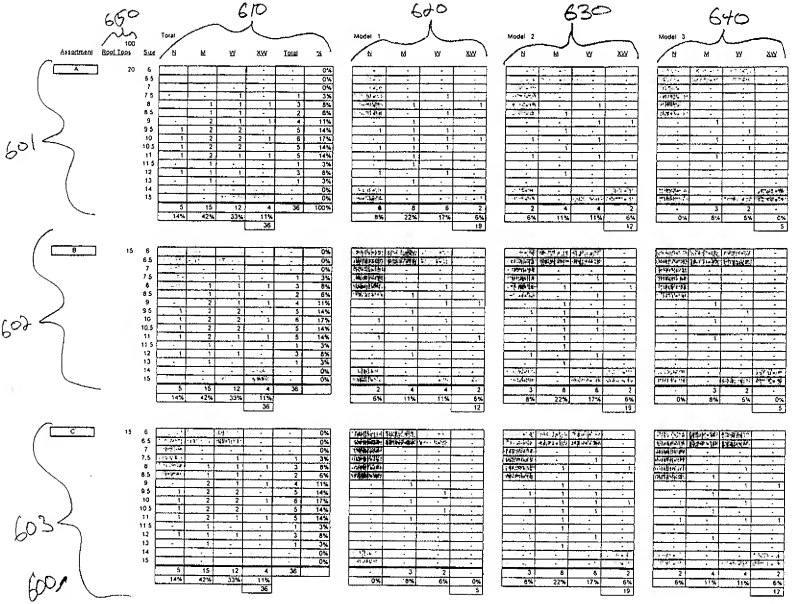
800

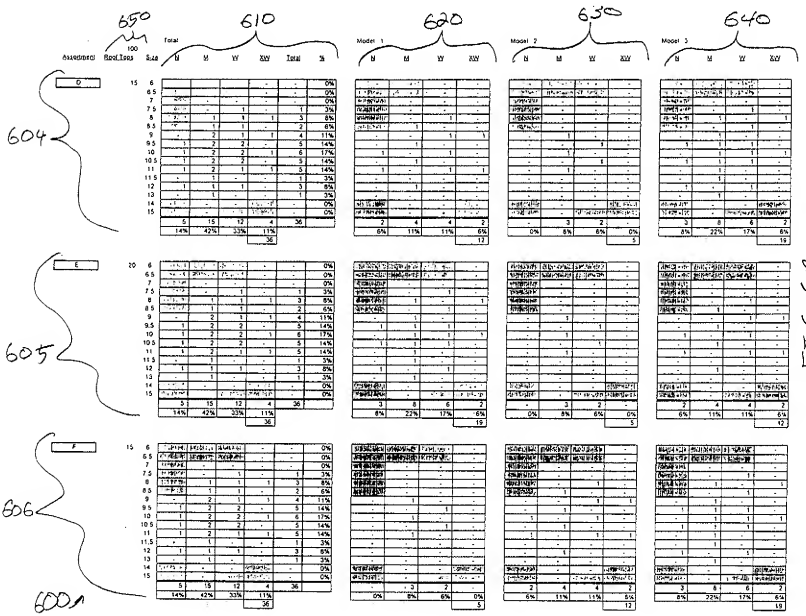
Size Chart

	Narrow	Medium	Wide	X-Wide	
6					
6.5					
7					
7.5			1		
8		1	1	1	
8.5		1	1		
9		2	1	1	
9.5	1	2	2		
10	1	2	2	1	
10.5	1	2	2		
11	1	2	1	1	
11.5		1			
12	1	1	1		
13		1			
14					
15					
	5	15	12	4	36

28	Sizes Displayed on Virtual Inventory Rack
19	Special Order Sizes

FIG. 8


650
100
610
640
630
640
Assortment
Bowl Types
Size
Total
Model 1
Model 2
Model 3
N
M
W
XW
Total
%
A
B
C
601
602
603
600
20
15
6
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
13
14
15
0%
3%
6%
11%
14%
17%
14%
11%
8%
3%
0%
5
15
12
4
36
100%
14%
42%
33%
11%
36
FIG 6A


650
100
610
620
630
640
Total
Model 1
Model 2
Model 3
Assessment
Bed Days
Size
M
W
XW
Total
%
604
605
606
600
608
15
6
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
13
14
15
20
5
15
12
4
36
14%
42%
33%
11%
8%
17%
22%
17%
19

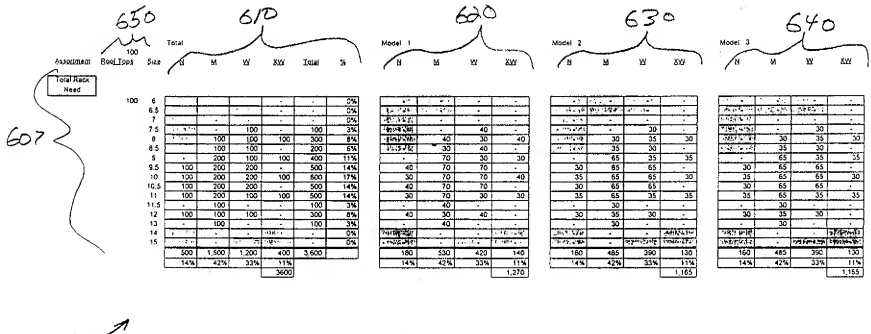
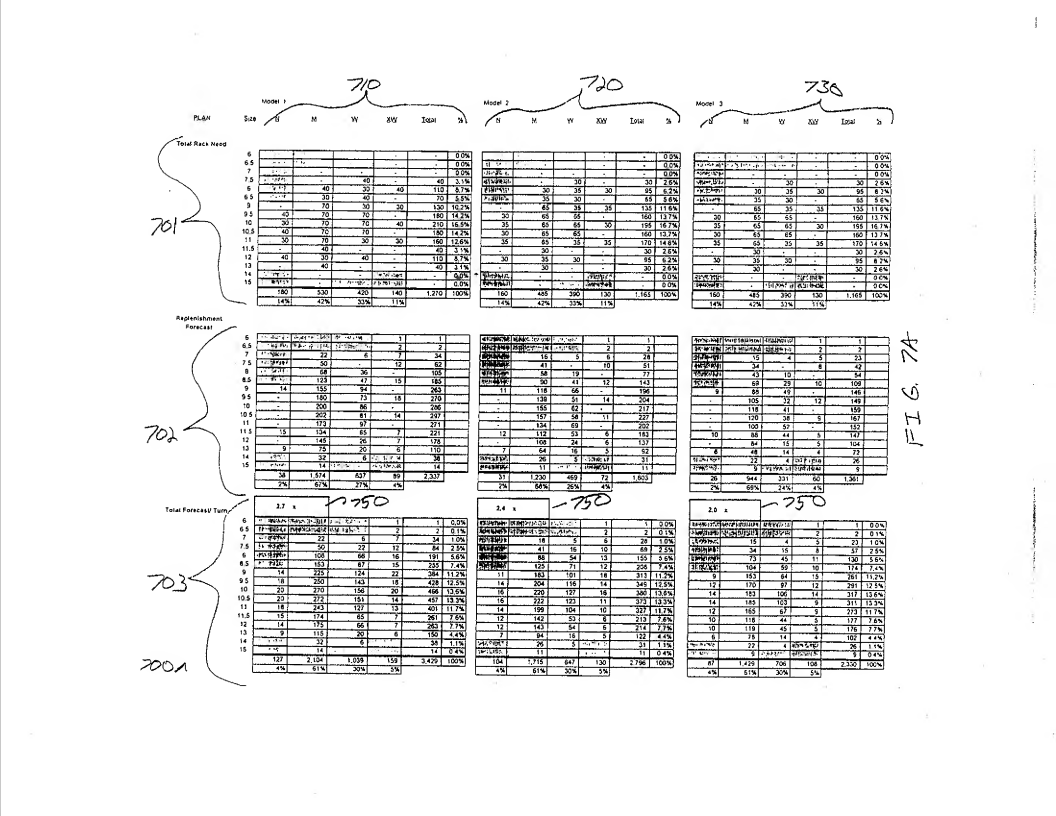
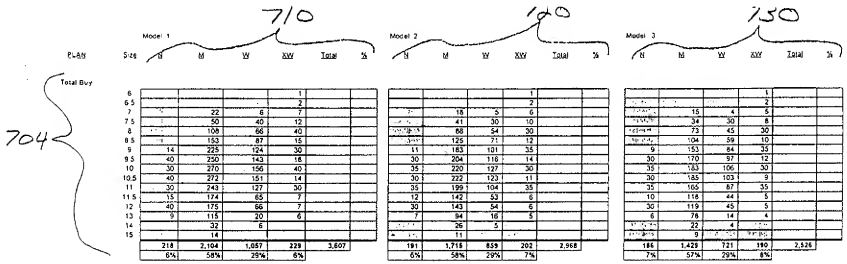

650
610
620
630
640
607
600
Assortment
Foot Type
Size
Total
Model 1
Model 2
Model 3
Total Rack Head
M
W
XW
Total
%

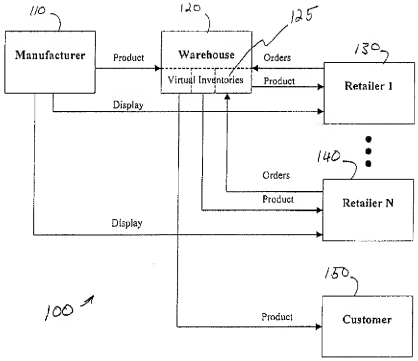
FIG. 6C


710
720
730
Model 1
Model 2
Model 3
PLAN
Size
S
M
W
XW
Total
%
Total Rack Need
701
Replenishment Forecast
702
Total Forecast/ Turn
703
700
750
FIG. 7A


710
720
730
Model 1
Model 2
Model 3
PLAN
Size
N
M
W
XW
Total
%
Total Buy
704
6
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
13
14
15
218 2,104 1,057 228 3,607
6% 58% 29% 6%
191 1,715 859 202 2,968
6% 58% 29% 7%
186 1,429 721 190 2,526
7% 57% 29% 8%

700

FIG. 7B


110
120
125
130
140
150
100
Manufacturer
Product
Warehouse
Virtual Inventories
Orders
Product
Retailer 1
Display
Orders
Product
Retailer N
Display
Product
Customer